area immediately to the westward marked "Warmer" aroused my interest, and the observers at the two stations, Modena, Utah, and Winnemucca, Nev., have kindly supplied data of hourly temperatures, wind directions and velocities for the 24 hours ending with 8 a. m. 75th meridian time, February 8, 1923.

From these data it is inferred that the influence of the sea-level pressure distribution upon the speed of the wind was practically nil. The approaching cyclone, however, caused a shift in the wind from the east on the early morning of the 7th to west and southwest during the later hours of the 7th. The winds from the east were cold with temperatures at zero F. and below. With the shift of the wind into a westerly quarter on the 7th temperature rose sharply and to greater heights than had been attained on any of the preceding 4 or 5 days, although each of these days was free from clouds that might have intercepted the incoming solar radiation. One result of the high temperatures of the 7th was that the gain during the daylight hours was maintained during the night so that the minimum temperature on the morning of the 8th was 20° F. higher than on the immediately preceding morning; therefore, that which appears on the daily weather map as an area of "warmer 20 degrees" was in reality a failure of the night temperatures to sink to the low value of the preceding nights. It would be interesting, of course, to know what was the cause of the failure of the night temperatures to sink to the accustomed level of the period immediately preceding. A few clouds were observed at one of the stations about sunset of the 7th and the vapor pressure increased during that date to a maximum on the 8th. The rise in temperature on the 7th was clearly due to insolation unobstructed by any clouds whatsoever. At Winnemucca temperature rose from zero to 43° F. in 6 hours; at Modena from −9 to 36 in 10 hours. The opportunity for rising temperature on any of the five days preceding the 8th was evidently as great as on that date. Anticyclonic weather prevailed, however, and the slight gain by day was lost by night radiation to the sky. The interesting question arises what constituent of the atmosphere is responsible for checking the nocturnal radiation to which attention has has been called?—*A. J. H.*

TEMPERATURE AND MORTALITY IN NEW YORK CITY.[1]

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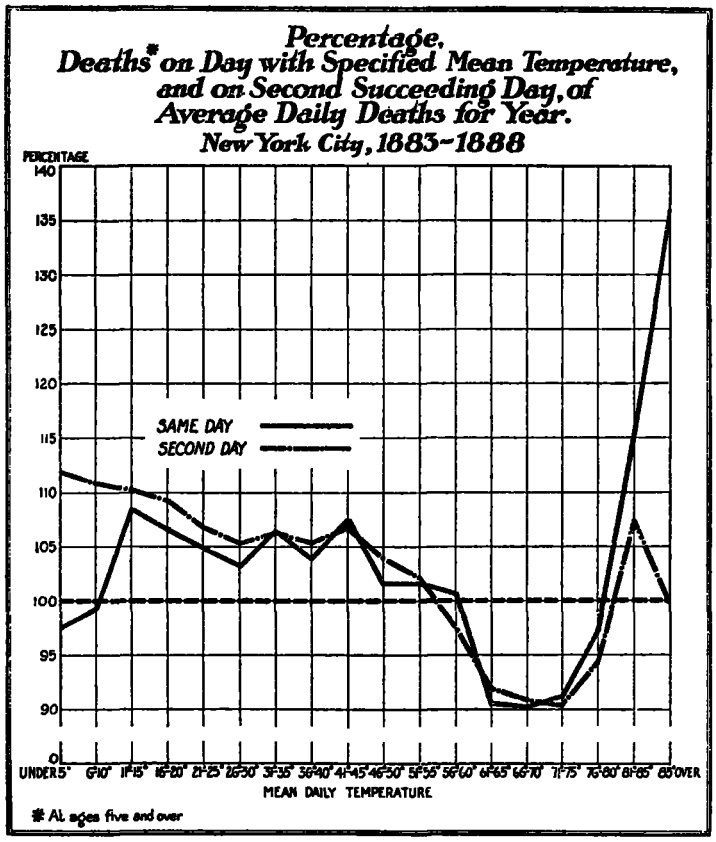
Three or four decades ago weather records were commonly published in conjunction with mortality data. This was due to a widespread conviction that the weather is the chief cause of seasonal variations in disease. Then came not only a new appreciation of the importance of nutrition, but also Pasteur's discovery of the fundamental part played by bacteria in disease. Investigators, medical men and public health officials were so impressed by the wonderful improvements in health which became possible through proper food and the control of bacteria that they almost overlooked the effects of the atmosphere. Lately, however, there have been signs of a revival of interest in the effect of weather and climate, and there seems to be good prospect of a return to a more balanced condition where the control of nutrition, parasitic organisms, and atmospheric environment will play more nearly equal parts in the world's campaign for health.

[1] A preliminary report from the committee on the atmosphere and man, National Research Council.

One sign of this change is the appointment by the National Research Council of a committee on the atmosphere and man. This committee has secured the cooperation of the New York City Department of Health and various life insurance companies in an investigation of the relation of the weather to deaths in New York City. For this purpose, the data for six years from 1883 to 1888 were chosen. That seems to be going back a long way, but, strange to say, those are the latest years for which statistics of daily deaths appear to be available in published form for any large city of the United States. Daily statistics are essential to any thorough understanding of the effect of the weather.

One phase of the joint investigation involves a study of the relation of deaths to temperature. The first



question to be answered was: How do the deaths vary at different temperatures? The crude materials that bear on the answer to this question are given in the following table. The 2,170 available days of the 6 years under discussion have there been divided into groups according to temperature. There were 5 days when the average temperature in New York City for day and night together was only 5° F. or less, 15 days with a mean temperature of 6° to 10° F. and so on up to the largest group containing 238 days when the thermometer averaged from 66° to 70°. The figures in the other columns show the deaths among persons over 5 years of age, expressed in percentages of the daily average deaths for the year in which each day with a given temperature occurred. The column marked 0 indicates the relative number of deaths, as thus defined, on the days when a given temperature prevailed, the next column shows the relative deaths one day later, and so on up to the thirteenth day.

The graph shows (1) the relative deaths, as above defined, on the day on which a given temperature occurs, and (2) on the second day thereafter.

We should, perhaps, eliminate the findings for the temperatures less than 10° and over 85° because of the small number of days involved. But, beginning with days whose mean daily temperature was 11°, the table (column 0) indicates that (1) the highest death rates occur on the colder days; (2) the excess mortality declines up to a temperature of about 60°; (3) the most favorable mortality is on those days when the temperature averages between 60° and 75°; and (4) there is a very rapid increase in mortality with increasing temperature beyond 75°.

Everyday observation and the table below suggest that cold weather does not exercise its maximum effect on the same day, but that such effect is deferred for several days. In this series the most pronounced effect of cold temperatures seems to occur two days afterward. The unfavorable effect of cold weather lasts, however, for many days after its occurrence. But this condition is evidently connected with the fact that cold weather persists for several days at a time and the effect of such persistence may be cumulative on the death rate. This point requires further study. On the other hand, as might be expected, the effect of warmer temperatures is most pronounced on the same day, continuing only for one or two days thereafter.

Daily mortality in New York City, 1883–1888, among persons 5 years of age and over.

Mean daily temperature.	Number of days.[1]	Mortality in per cent of daily average for year in which temperature occurred.						
		Same day.	Days after.					
		0	1	2	3	4	5	6
Under 5°	5	97.5	99.4	111.9	105.6	111.4	108.8	104.9
6°–10°	15	99.3	104.9	110.9	115.9	114.9	105.3	104.6
11°–15°	39	108.5	111.4	110.2	108.9	109.3	109.1	106.7
16°–20°	71	106.7	104.9	109.1	108.2	112.8	109.6	108.6
21°–25°	89	104.9	106.5	106.8	109.1	107.2	108.4	107.2
26°–30°	130	103.2	104.3	105.3	104.7	106.7	108.1	107.5
31°–35°	181	106.5	107.0	106.3	108.4	107.0	106.0	107.0
36°–40°	189	103.9	103.3	105.3	105.3	104.2	104.4	105.8
41°–45°	154	107.5	108.1	106.8	106.7	107.5	107.7	107.6
46°–50°	153	101.6	103.9	104.0	103.5	102.3	102.8	100.7
51°–55°	151	101.6	103.5	102.1	100.7	100.7	101.1	101.4
56°–60°	170	100.7	97.2	97.4	97.0	97.9	97.9	99.5
61°–65°	176	90.5	91.9	91.9	93.0	91.9	93.5	94.0
66°–70°	238	90.2	89.3	90.9	91.4	91.8	92.3	89.6
71°–75°	206	91.2	90.5	90.4	91.6	91.9	90.4	89.6
76°–80°	147	97.2	94.7	94.3	93.0	92.1	94.0	90.1
81°–85°	48	115.6	114.4	107.4	95.6	96.1	107.7	96.0
Over 85°	8	136.1	140.0	99.7	110.2	113.0	113.1	95.8

Mean daily temperature.	Number of days.[1]	Mortality in per cent of daily average for year in which temperature occurred.						
		Days after.						
		7	8	9	10	11	12	13
Under 5°	5	113.0	113.0	117.5	96.5	110.2	103.9	96.5
6°–10°	15	101.1	110.0	105.6	118.1	99.7	104.6	104.6
11°–15°	39	107.2	106.8	106.0	107.4	108.2	109.5	110.2
16°–20°	71	107.7	107.0	109.8	109.3	110.9	107.7	110.7
21°–25°	89	107.7	105.6	107.5	109.6	105.1	109.6	108.1
26°–30°	130	106.5	108.2	107.7	107.2	108.2	109.5	107.9
31°–35°	181	107.7	108.2	107.2	106.7	108.1	106.7	107.0
36°–40°	189	106.3	106.0	106.3	104.4	107.2	106.3	107.9
41°–45°	154	108.4	107.5	106.1	108.6	105.8	104.7	105.4
46°–50°	153	99.3	101.1	101.1	102.6	100.4	101.6	102.3
51°–55°	151	101.1	99.3	101.6	99.6	101.6	102.6	100.2
56°–60°	170	98.6	97.6	98.8	98.1	97.0	96.3	95.6
61°–65°	176	93.9	93.9	92.3	93.7	91.9	92.3	91.7
66°–70°	238	93.3	93.0	92.6	90.4	91.6	93.5	93.0
71°–75°	206	91.6	91.9	93.0	93.7	94.1	93.0	93.5
76°–80°	147	91.6	91.9	91.6	91.4	91.0	90.7	92.3
81°–85°	48	90.3	88.4	89.1	94.6	92.6	92.6	90.9
Over 85°	8	96.5	111.1	120.8	92.8	90.2	101.8	96.3

[1] Total days, 2,170.

During the years in question, the deaths at times of high or low temperature were 10.2 per cent higher than the deaths at temperatures of 60° to 70°. Similar conditions prevail to-day. If the death rate all the time were as low as it is when the temperature averages about 65°, one death out of every ten might be prevented. Low temperature, to judge from the table produces about seven times as much ill effect as high, for normally there are about seven days with a temperature below 60° for every day above 75°. It is not correct, however, to speak as if low temperatures alone were the cause of the deaths. Low temperature in itself is probably the cause of very few deaths. The effects often attributed to the cold may be due in many instances to improper indoor conditions. In fact, it is not improbable that the benefit derived from the stimulus of going into the cold outdoor air in winter is greater than the harm due to chills. Nevertheless, the fact remains that in New York City during the years under discussion the death rate during the coldest days of winter was more than 20 per cent greater than in days when the temperature was about 65°.

What all this seems to mean is that we know how to guard against low temperature by means of clothing, houses, fire, and exercise, and that in a civilized community it is very rarely necessary that anyone should come to much harm from low temperature in itself. On the other hand, we have not learned to guard against the harmful conditions which we ourselves produce in our attempts to ward off the cold. The graph * * * affords a suggestion of what happens when we light our fires. Notice the steepness of the curve between 60° and 40°. These are the temperatures when we begin to have fires in our houses. The steepness of the curve seems to mean that as soon as we start our fires we create conditions which promote bad health and as soon as we let them out in the spring we remove those conditions. It may be that a large part of the excess death rate in cold weather is preventable.

The committee on the atmosphere and man is working on the problem of all the conditions which raise the death rate at temperatures above or below the narrow ideal limits. It is not to be expected that the curves in the graph can ever be converted into straight lines. It is to be expected, however, that the high parts below 60° and above 75° can be greatly lowered.

The foregoing is a first study of a few of the facts available in the records of the committee. Further inquiries are being made into the effect of relative humidity and of interduirnal change in temperature. It is hoped also to have net correlation studies prepared when all of the necessary crude tabulations are completed.

THE DROUGHT IN ITALY DURING 1921.

By FILIPPO EREDIA.

[Abstracted from *Comptes Rendus*, February 5, 1923, pp. 402–404.]

The normal course of annual precipitation in the southern portion of Italy and in the islands is a maximum in winter and a minimum in summer; in the northern portion, two maxima, one in spring and the other in autumn, and two minima, one in summer and the other in winter.

During the year 1921, the annual march was wholly abnormal. There was but slight fall of snow in January and February, abundant rain in spring, and excess of rain in summer, and a remarkable deficiency beginning in September and continuing to the end of the year.